Section 1
Organization and Administration

I. Introduction

The facility manager and project leaders operating within the facility are responsible for ensuring the safety of operations and that an acceptable level of performance is achieved. To achieve this objective, it is important that organizational and individual responsibilities of facility managers, project leaders, and supervisors be defined and documented. Facility managers are typically responsible for providing a facility and that contains the elements necessary to safely achieve programmatic goals; project leaders are typically responsible for the accomplishment of research and development efforts; and supervisors are typically responsible for directing day-to-day activities of employees and keeping management informed of operating problems and achievements. (The facility manager and project leader may or may not be the same person and may or may not be from the same directorate.) In addition, supervisors should periodically observe activities in the workplace, provide constructive feedback on job performance, establish goals for safety and program performance, and analyze operating problems with the intent to minimize them.

II. Guidelines

The facility manager and / or project leaders are responsible for ensuring the following elements are provided, as appropriate:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. An organization chart and description of organizational responsibilities	Yes	FM / PL		
2. Facility management position descriptions	Yes	FM		
3. Provisions for adequate staffing levels	Yes	FM / PL		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
4. Routine observation of work activities by supervision	Yes	FM / PL		
5. Trend analysis on ES&H and operating problems		FM / PL		
6. Safety, environmental, and program goals	Yes	FM / PL		
7. Personnel appraisals that include evaluation of adherence to ES&H and operating procedures	Yes	FM / PL		
8. Training for managers and supervisors	Yes	FM / PL		
9. Safety preplanning requirements for operations not authorized by existing safety procedures	Yes	FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. An organization chart with description of organizational responsibilities

HHF — An organization chart should exist and include facility, programmatic, and support organizations (e.g., the Chemistry and Materials Sciences Department, Hazards Control, and Mechanical Engineering). The general responsibilities of these organizations should be specified.

MHF/LHF — Organizational responsibilities should be defined for both programmatic and support organization personnel. (Reference: Appendix 2-B, Part C, of *Health & Safety Manual.*)

2. Facility management position descriptions

HHF — Facility management position descriptions should specify assurance and ES&H responsibilities, as well as any programmatic responsibilities.

MHF/LHF — The individual responsible for implementing the ES&H controls in the FSP or OSP should be identified. (Reference: Appendix 2-B, Parts C and E of *Health & Safety Manual*.)

3. Provisions for adequate staffing levels

HHF — Staffing levels should be adequate to maintain the level of ES&H support specified in the FSP and applicable OSPs. For example, if a procedure requires certain tasks to be accomplished (such as regularly checking the balance of the facility's ventilation system), an individual must be identified to fulfill those responsibilities. Alternates should be identified to cover these functions during periods of vacation or extended illness and after the transfer of personnel.

MHF/LHF — Staffing level should be adequate to comply with the level of ES&H support specified in the FSP and applicable OSPs.

4. Monitoring of work activities by supervision

HHF — Project leaders or supervisors should periodically observe important operational activities within their area of responsibility. This allows for the timely identification and correction of deficiencies. It also provides the opportunity for employees to provide direct feedback to supervision regarding operating problems. (Reference: Chapter 1 of *Health & Safety Manual*.)

MHF/LHF — Supervisors or their designees should periodically observe important operational activities to identify and correct safety and operating deficiencies. (Reference: Chapter 1 of *Health & Safety Manual*.)

5. Performance of trend analysis on ES&H and operating problems

HHF — Trend analysis (i.e., tracking the frequency of an event as a function of time) should be performed on events that could result in the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

Trending is already required in some facilities, in accordance with Secretary of Energy Notice SEN 29-91. Examples of items trended under SEN 29-91 include collective radiation dose, lost work days, unplanned shutdowns, personnel contamination events, and corrective maintenance backlog. Compliance with SEN 29-91 meets the requirements of this guideline.

MHF/LHF — Supervisors should be aware of ES&H problems and attempt to minimize those that happen recurrently. (NOTE: Some MHFs and LHFs are required by DOE to comply with SEN 29-91.)

6. Safety, environmental, and program goals

HHF — Specific safety, environmental, and program goals should be clearly stated. Goals should be auditable, measurable, and realistic and have input from individuals who have some responsibility for achieving them. The progress toward achieving goals should be periodically reviewed with the intent of either modifying the goal or modifying the actions being taken to meet it. Examples of goals include limiting releases of toxic or radioactive materials to the environment to specific amounts, setting specific "as low as reasonably achievable" (ALARA) goals for exposure to radiation and toxic materials, and achieving specific programmatic milestones. Goals should comply with any site-wide, goal-setting requirements. For example, any facility where individuals are likely to receive whole-body doses in excess of 100 mrem/yr, or hand doses in excess of 1 rem/yr are required to set ALARA goals. (Reference: Supplement 33.011 of *Health & Safety Manual*.)

MHF/LHF — Safety and environmental goals should comply with any site-wide, goal-setting requirements. (Reference: Supplement 33.011 of *Health & Safety Manual*.)

7. Personnel appraisals that include evaluation of adherence to ES&H and operating procedures

HHF/MHF/LHF — Written performance appraisals should be used to provide feedback to employees on their safety and job performance. Feedback on their performance should summarize contributions to the goals developed under Part 6 of this section, provide constructive comments on areas of deficiencies, and list steps necessary to improve performance. Performance appraisals should be provided at least annually. (Reference: Section E of *LLNL Personnel Policies and Procedures Manual*.)

8. Training for managers and supervisors

HHF — Formalized training for managers and supervisors should be incorporated into facility or program training plans, as appropriate. The training should include ES&H issues, facility operations, and supervisory skills. (Reference: *LLNL Training Program Manual* and Chapter 7 and Appendix 2-B, Part E, of *Health & Safety Manual*.)

MHF — Managers and supervisors should receive training in supervisory skills, ES&H issues, and facility operations in their area of responsibility. (Reference: *LLNL Training Program Manual* and Chapter 7 and Appendix 2-B, Part E, of *Health & Safety Manual*.)

LHF — Supervisors should receive training in supervisory skills, ES&H issues, and facility operations in their area of responsibility. (Reference: *LLNL Training Program Manual* and Chapter 7 and Appendix 2-B, Part E, of *Health & Safety Manual*.)

9. Safety preplanning requirements for operations not covered by existing safety procedures

HHF, MHF, LHF — Operations not covered by existing safety procedures (e.g., *Health & Safety Manual*, an FSP, or an OSP) must comply with the preplanning requirements specified in Chapter 2 of *Health & Safety Manual*. (Reference: Chapter 2 of *Health & Safety Manual* and the preface to the "Preparation Guide for Facility Safety Procedures" in Appendix 2-B of *Health & Safety Manual*.)

Section 2
Operating Practices and Safety Procedures

I. Introduction

The facility manager and / or project leaders are responsible for providing a safe work environment—i.e., ensuring that an adequate safety program exists, developing necessary ES&H procedures, and ensuring that employees are properly trained regarding the associated hazards and operating procedures. To do their jobs effectively, managers must be kept informed of current conditions in a facility or operation.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Instructing employees to notify managers and / or supervisors of off-normal, unusual, and emergency events or of major changes in schedules	Yes	FM / PL		
2. Identifying responsible personnel	Yes	FM / PL		
3. Developing safety procedures	Yes	FM / PL		
4. Ensuring that employees are trained to properly operate equipment and understand the OSP	Yes	FM / PL		

Each facility should have a ES&H program, scaled to the operations within that facility. Currently, the Hazards Control and Environmental Protection Departments provide guidance and services in establishing and carrying out the ES&H program in each facility. The ES&H team assigned to each facility provides a ES&H team action plan, which is maintained in the ES&H team leader's office and contains a detailed program for each of the guidelines listed below, as appropriate. (Each ES&H team is comprised of a ES&H team leader, industrial safety engineer, health physicist, industrial hygienist, criticality safety engineer, fire protection engineer, environmental analyst, and health and safety technologists.) The safety program should contain the following elements, as appropriate:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
5. Industrial safety program	Yes	FM		
6. Health physics program		FM		
7. Industrial hygiene program	Yes	FM		
8. Criticality safety program		FM		
9. Fire safety program	Yes	FM		
10. Environmental protection program	Yes	FM		
11. ALARA program		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Instructing employees to notify managers and/or supervisors of off-normal, unusual, and emergency events or of major changes in schedules

HHF — Employees should be instructed to promptly notify the facility manager or program supervisor (as appropriate) of abnormalities; off-normal, unusual or emergency events; changes in operational status; significant changes in schedules; and difficulties encountered in performing tasks.

MHF/LHF — Employees should be instructed to promptly notify their supervisor of abnormalities; off-normal, unusual or emergency events; changes in operational status; significant changes in schedules; and difficulties encountered in performing tasks.

2. Identification of responsible personnel

HHF — A responsible facility or program person should be identified for each operation, as appropriate. This person may be the "lead experimenter," the area supervisor, or the person responsible for operation of a specific system, piece of equipment, shop, laboratory, or work area. The "responsible person" should have an alternate and may delegate responsibilities as he/she sees fit. The responsible person typically ensures that operations are conducted in accordance with existing procedures; attends to good-housekeeping issues; functions as a contact for questions and off-normal or emergency conditions; and provides information to the appropriate management. (Reference: Appendix 2-B, Part B, of *Health & Safety Manual*.)

MHF — A responsible facility or program person should be identified for implementing the controls specified in the FSP and all other applicable Laboratory ES&H standards. The responsible person may have an alternate and may delegate responsibilities as he/she sees fit. (Reference: Appendix 2-B, Part B, of *Health & Safety Manual*.)

LHF — A responsible facility or program person should be identified for ensuring that operations are within the scope of *Health & Safety Manual* and evaluating whether an FSP is required. The responsible person may have an alternate and may delegate responsibilities as he/she sees fit. (Reference: Appendix 2-B, Part B, of *Health & Safety Manual*.)

3. Developing safety procedures

HHF/MHF/LHF — Safety procedures are required for activities that do not conform to the codes, standards, and guidelines provided in *Health & Safety Manual*. Safety procedures are issued as one of three types: FSPs, OSPs, or FMPs. An FSP is a document that contains the basic ES&H rules (beyond those contained in *Health & Safety Manual*) for a facility, building, or area. An OSP is generally more limited in scope and specific in content than the FSP, but also contains controls for conducting a job safely. FMPs include the essential ingredients of a quality assurance plan, as well as those of an FSP. The format for safety procedures is specified in Chapter 2 of *Health & Safety Manual* and currently requires the following elements: (1) introduction, (2) reason for issue, (3) responsibilities, (4) training requirements, (5) hazards analysis, (6) controls, and (7) authorizing signatures. NOTE: Quality assurance and maintenance sections may soon be included in OSPs. (References: Appendices 2-A through 2-D of *Health & Safety Manual*.)

4. Ensuring that employees are trained to properly operate equipment and understand the OSP

HHF — Supervisors should ensure employees know how to properly operate equipment, handle hazardous material, and recognize and respond to off-normal conditions (see Section 5 of this supplement). They should also ensure employees understand the inherent hazards of the material / equipment they are working with and the appropriate controls thereof (see Section 14 of this supplement). Employees should understand (1) those general activities that may normally be performed without notifying the facility manager or program supervisor; (2) that nonroutine operations should not be performed without specific approval of the facility manager, program supervisor, or designated staff, as appropriate; and (3) that emergency response does not need management approval, but that management should be notified as soon as possible after the event. (Reference: Section 5 of this supplement and Chapters 2, 3, and 7 of *Health & Safety Manual.*)

MHF/LHF — Supervisors should ensure employees know how to properly operate equipment, handle hazardous material, and recognize and respond to off-normal conditions (see Section 5 of this supplement). They should also ensure employees understand (1) the inherent hazards of the material / equipment they are working with and the appropriate controls thereof, and (2) that emergency response does not need supervisory approval, but that the supervisor should be notified as soon as possible after the event (see Section 14 of this supplement). (References: Section 5 of this supplement, and Chapters 2, 3, and 7 of *Health & Safety Manual.*)

5. Industrial safety program

HHF/MHF/LHF — The industrial safety program should include, as appropriate, (1) guidance for construction safety; (2) requirements for the use of head, eye, foot, and fall protection when working at heights; (3) procedures for working with cryogens; (4) procedures for entering or working in or around energized equipment or fixtures; (5) procedures for working with explosives; (6) requirements for machine tool guarding; (7) guidance for earthquake safety; (8) procedures for working with lasers, infrared, and ultraviolet (UV) radiation; (9) procedures for using cranes and other material-handling devices; (10) procedures for working with pressurized systems; and (11) procedures for identifying safety hazards. (Reference: Chapters 6, 10, 22–24, 26–29, and 32 of *Health & Safety Manual* and Hazards Control's industrial safety discipline action plan [DAP].)

6. Health physics program

HHF/MHF/LHF — The health physics program should include, as appropriate, (1) requirements for the use of respiratory protection; (2) procedures for working with radioactive materials and radiation sources; (3) procedures for working with radiation-producing equipment; (4) procedures for identifying workplace hazards; (5) procedures for monitoring the workplace; and (6) procedures for keeping radiation exposures ALARA (see item 11 below). (Reference: Chapter 33 of *Health & Safety Manual* and Hazards Control's health physics DAP.)

7. Industrial hygiene program

HHF/MHF/LHF — The industrial hygiene program should include, as appropriate, (1) requirements for the use of hearing and respiratory protection; (2) provisions for high-efficiency particulate air (HEPA) filter testing; (3) procedures for working with chemicals; (4) procedures for working with hazardous materials; (5) procedures for working with microwaves, radio frequency, and, very low frequency (VLF) radiation; (6) procedures for entering or working in confined spaces; (7) procedures for working with biohazards; (8) procedures for identifying workplace hazards; (9) procedures for monitoring the workplace; and (10) a health hazard communication or chemical hygiene program. (Reference: Chapters 10, 12, 21, 26, and 30 of *Health & Safety Manual* and Hazards Control's industrial hygiene DAP.)

8. Criticality safety program

HHF/MHF/LHF — The criticality safety program should include, as appropriate, (1) limits on the mass of materials allowed in a workstation; (2) limits on the configuration of materials handled; (3) limits on the amount of moderating material permitted; (4) procedures for identifying criticality hazards in the workplace; and (5) procedures for monitoring the workplace. (Reference: Chapter 31 of *Health & Safety Manual* and Hazards Control's criticality safety DAP.)

9. Fire safety program

HHF/MHF/LHF — The fire safety program should include provisions for (1) minimizing the potential for the occurrence of a fire; (2) ensuring that fire does not cause an unacceptable on-site or off-site release of hazardous material that will threaten the public health and safety; (3) providing an acceptable degree of life safety to LLNL and contractor personnel and the public from fire in LLNL facilities; (4) ensuring that vital programs will not suffer unacceptable delays as a result of a fires; and (5) ensuring that property damage from fire does not exceed an acceptable level. (Reference: Chapters 25 of *Health & Safety Manual* and Hazards Control's fire safety DAP.)

10. Environmental protection program

HHF/MHF/LHF — The environmental protection program should include provisions for (1) identifying waste streams and minimizing hazardous, mixed, and radioactive waste; (2) packaging hazardous, mixed, and radioactive waste, spill protection and prevention plans, obtaining necessary permits, and National Environmental Policy Act (NEPA) compliance; and (3) monitoring effluents from the facility. NOTE: Although the Environmental Protection Department is distinct and separate from the Hazards

Control Department, the environmental analyst functions as a member of the area ES&H team. (Reference: *Environmental Protection Handbook*.)

11. ALARA program

HHF — The facility ALARA program should include (1) establishment of ALARA goals for ionizing radiation if individuals in the facility are likely to receive 100 mrem / yr to the whole body or 1 rem / yr to the hands; (2) programs or procedures directed at minimizing personnel exposures to ALARA; and (3) periodic review of personnel exposure trends by supervisory personnel. (Reference: DOE Order 5480.11 and Supplement 33.011 of *Health & Safety Manual*.)

MHF/LHF — The facility ALARA program should include (1) establishment of ALARA goals for ionizing radiation if individuals in the facility are likely to receive 100 mrem / yr to the whole body or 1 rem / yr to the hands; and (2) programs or procedures directed at minimizing personnel exposures to ALARA. (Reference: DOE Order 5480.11 and Supplement 33.011 of *Health & Safety Manual*.)

Section 3
Control Room Operations

I. Introduction

In some facilities, program and/or facility operations are directed and/or monitored from a central control room or control area. This arrangement is particularly common in large facilities where operations are relatively singular in nature (e.g., high-energy accelerators [such as the 100-MeV Linac], large laser facilities [such as NOVA or LIS], or the plutonium facility [where safety features such as the ventilation and alarm systems are monitored]). In some cases, a single facility may contain multiple control rooms for separate operations. It is important that (1) control rooms be identified and delineated; (2) access be limited so that operations are not hampered; and (3) only authorized personnel be permitted to operate the equipment in the control room.

II. Guidelines:

The facility manager and/or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying and delineating control rooms		FM/PL		
2. Limiting access to the control room to authorized personnel		FM/PL		
3. Providing for prompt detection of, and response to, alarm conditions		FM/PL		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
4. Specifying the personnel who are authorized to operate control room equipment		FM / PL		
5. Professional behavior in the control room		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying and delineating control rooms

HHF/MHF/LHF — Identify and physically delineate control rooms associated with systems, equipment, or processes where operator error at the control panel could result in the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

The following items in this section apply to these control rooms.

2. Limiting access to the control room to authorized personnel

HHF/MHF/LHF — When appropriate, the control room or control area should be posted to indicate that only authorized personnel are permitted entry. Access control may or may not be required when the facility or experiment is not operational. Unless otherwise specified in the FSP or OSP, people listed as "responsible individuals" in the applicable FSP or OSP (or their alternates or designees) may authorize access to the control room or control area.

3. Providing for prompt detection of, and response to, alarm conditions

HHF/MHF/LHF — Unless unattended operations are permitted, the control panel should be monitored frequently during operations so that abnormal operating conditions can be detected promptly. During unattended operations, important alarms (e.g., fire alarms, criticality alarms, or stack monitors) should be monitored at a staffed remote location. All reasonable actions should be taken to correct the alarm cause and clear the alarm.

4. Specifying personnel who are authorized to operate control room equipment

HHF/MHF/LHF — Procedures (such as FSPs, OSPs, or operating procedures) should clearly specify who is authorized to operate control room equipment.

5. Professional behavior in the control room

HHF/MHF/LHF — Only activities related to the operation or specifically authorized by management should be authorized in the control room when the equipment or system is being operated. Potentially distracting activities should be prohibited.

Section 4
Communications

I. Introduction

The facility manager and / or project leaders are responsible for providing adequate communication capability in their facilities during routine and emergency conditions. Examples of communication systems include: telephones, public address systems, personnel beepers, radios, FAX machines, computer networks, megaphones, and audible and visual alarms. Employees in the facility should be instructed in the proper use of facility-specific communication devices.

II. Guidelines

The facility manager and / or project leaders are responsible for providing a communication system(s) that:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Provides for easy communications within the facility and in the immediate area	Yes	FM		
2. Is capable of readily notifying employees of off-normal or emergency conditions	Yes	FM		
3. Allows for contacting employees who are outside the facility or "on call"		FM / PL		
4. Is reliable, usable in the local environment, and easily accessed and utilized by employees	Yes	FM		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
5. Is available in out-of-the way areas		FM		
6. Is periodically tested for functionality, if not used for routine communications	Yes	FM		
7. Is appropriately used by employees	Yes	FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Provides for easy communications within the facility and in the immediate area

HHF — Devices such as telephones or paging systems should be provided within a facility and in the immediate area. Emergency communication systems should be supplied with emergency power.

MHF/LHF — Devices such as telephones or paging systems should be provided within a facility.

2. Is capable of readily notifying employees of off-normal or emergency conditions

HHF/MHF/LHF — Provisions should exist for immediate notification of employees who may be in a hazardous area or environment. Notification systems may include a public address system, audible alarms, visual alarms, etc.

3. Allows for contacting employees who are outside the facility or "on call"

HHF/MHF/LHF — As appropriate, provisions should exist for locating key employees during off-hours, and during the workday while they are outside the facility. "Provisions" may consist of making home phone numbers available or wearing beepers when not near a listed phone number.

4. Is reliable, usable in the local environment, and easily accessed and used by employees

HHF — It is essential that alarms and communication systems function during normal and off-normal conditions. Communication systems should be easily accessed and used by employees and usable in the local environment (e.g., phones in noisy fan rooms should be equipped with acoustical enclosures). Visual alarms should be used in noisy areas where audible alarms may go unnoticed. Communication systems that are not reliable during a variety of conditions should either have a reliable backup, be modified to be reliable, be replaced, or not be considered as part of an emergency response communication system (e.g., a phone not connected to emergency power should not be relied on for emergency communication, or a bull horn may provide backup for an electronic microphone). Additionally, managers should assure that the appropriate paging systems have override capability so emergency messages are not obscured by routine messages. (Reference: Chapter 11 of *Health & Safety Manual*.)

MHF/LHF — It is essential that telephones and safety alarms function during normal and off-normal conditions. Visual alarms should be used in noisy area where audible alarms may go unnoticed. (Reference: Chapter 11 of *Health & Safety Manual*.)

5. Is available in out-of-the way areas

HHF/MHF — Communication systems should be available in remote areas, such as basements, lofts, and equipment rooms, if work is conducted in those areas.

LHF — Communication systems are suggested, but not required, in remote areas, such as basements or lofts.

6. Is periodically tested for functionality, if not used for routine communications

HHF/MHF — Alarm and communication systems should be periodically tested to assure functionality. The period between tests should be based on the likelihood of failure and the failure modes available. (Reference: Chapter 11 of *Health & Safety Manual*.)

LHF — Alarms should be periodically tested to assure functionality. The period between tests should be based on the likelihood of failure and the failure modes available. (Reference: Chapter 11 of *Health & Safety Manual*.)

7. Is appropriately used by employees

HHF/MHF — Employees should be instructed as to the appropriate use of the communication systems, how to access facility specific communication devices, and how to announce emergency conditions. (Reference: Chapter 3 of *Health & Safety Manual*.)

LHF — Employees should be instructed as to how to report emergency conditions. (Reference: Chapter 3 of *Health & Safety Manual*.)

Section 5
On-the-Job Training

I. Introduction

Employees who are new to an area may have a thorough technical background and a theoretical understanding of an operation, but may still require on-the-job training (OJT) to ensure they understand the specific details of an operation. For example, individuals operating an accelerator need to understand the detailed start-up procedure, just as employees changing a contaminated HEPA filter need to have hands-on (i.e., on-job) training before conducting this operation independently. Work conducted by personnel under instruction should be carefully supervised to avoid errors that could have significant impact on safety or operations. OJT should be conducted so that the trainee satisfactorily completes all of the required training objectives and receives maximum learning benefit from this experience.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying tasks requiring OJT		FM / PL		
2. Documenting OJT instructor qualifications		FM / PL		
3. Specifying how trainees may be used to support work activities		FM / PL		
4. Ensuring that trainees are aware of operating limits and hazards		FM / PL		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
5. Ensuring the appropriate area supervisor has approved OJT		FM / PL		
6. Documenting OJT		FM / PL		
7. Limiting the trainee's role during abnormal conditions		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying tasks requiring OJT

HHF/MHF/LHF — Identify operations or processes in the facility where misoperation or mishandling could result in the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

An OJT program should exist for these operations or processes and contain the elements listed below (items 2 through 7). OJT requirements for other operations may be addressed in relevant FSPs or OSPs. (References: *LLNL Training Program Manual* and Chapter 2, Appendix 2-B, of *Health & Safety Manual*.)

2. Documenting OJT instructor qualifications

HHF/MHF/LHF — Qualifications of the instructors and evaluators should be documented. Instructors should be qualified in the area they are instructing, and may become qualified by education, training, or experience. The facility manager or project leader (as appropriate), or his / her designee, is responsible for determining who is qualified to be an instructor.

3. Specifying how trainees may be used to support work activities

HHF/MHF/LHF — The constraints on trainees should be defined, as appropriate. Supervisors of trainees must ensure the trainees understand these constraints (e.g., the level of supervision required to conduct a certain task).

4. Ensuring that trainees are aware of operating limits and hazards

HHF/MHF/LHF — Supervisors of trainees must ensure the trainees understand operating limits and the hazards associated with the task being conducted. For example, plutonium handler trainees must understand the operating mass limits established for criticality safety purposes and the potential consequences of disregarding these limits.

5. Ensuring the appropriate area supervisor has approved OJT

HHF/MHF/LHF — Training modules typically pertain to a specific topic or operation. If someone other than the cognizant supervisor is conducting the training, the supervisor responsible for that topic or operation should approve the training module to ensure it contains all the necessary elements and that critical details are not overlooked.

6. Documenting OJT

HHF/MHF/LHF — Documentation requirements are specified in *LLNL Training Program Manual* and include the training plan (i.e., course objectives and outline) and auditable records of each individual's participation and performance in, or exception from, the OJT program. Retraining requirements, or the length of the qualification period, should also be specified. Supervisors should have access to qualification (OJT) records, as necessary, to support the assignment of work to qualified individuals. (Reference: *LLNL Training Program Manual*.)

7. Limiting the trainee's role during abnormal conditions

HHF/MHF/LHF — Depending on the type of training being conducted and the proficiency level of the trainee, acceptable responses to abnormal conditions will vary. Both the trainer and the trainee should understand their roles relative to operation of equipment or systems during abnormal conditions.

Section 6
Investigation of Abnormal Events

I. Introduction

Facility managers and / or project leaders are responsible for identifying abnormal events that require analysis. LLNL has an established procedure that defines those events to be analyzed, the format of the analysis report, and the procedure for follow-up on recommended corrective action.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

		Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1.	Identifying events that require analysis	Yes	FM / PL		
2	Using Supplement 4.08 of *Health & Safety Manual* for investigating events that require analysis	Yes	FM / PL		
3.	Ensuring follow-up on corrective actions	Yes	FM / PL		
4.	Initiating prompt response to incidents involving suspected sabotage	Yes	FM / PL		

II. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identification of events that require analysis

HHF/MHF/LHF — Managers and supervisors are responsible for identifying those events that require analysis and reporting them to their AD and Directorate's assurance officer, or their designees. Detailed information on identifying abnormal events and compliance with this guideline can be obtained by attending LLNL's emergency preparedness course (EM2010). (Reference: LLNL's Implementing Procedure for DOE Order 5000.3A; course EM2010, "Occurrence Reporting Requirements and Implementation"; and Supplement 4.08 of *Health & Safety Manual*.)

2. Using Supplement 4.08 of *Health & Safety Manual* for investigating events that require analysis

HHF/MHF/LHF — Supplement 4.08 of *Health & Safety Manual* contains information on the following: identification of the person responsible for initiating the analysis; appointment of an analysis committee; qualifications of analysis committee members; specification of information to be gathered; guidelines for conduct of the analysis; specification of the analysis report format; and specification of the analysis report time frame.

3. Ensuring follow-up on corrective actions

HHF/MHF/LHF — The appropriate managers should monitor progress on corrective actions until they are completed.

4. Notifying security in cases of suspected sabotage.

HHF/MHF/LHF — Acts of known or suspected sabotage are a special case of event investigations. If an act of sabotage is discovered or suspected, it is important to begin an investigation immediately and to accomplish the following:

- Determine the condition of the affected system(s) and ensure the operability of all safety-related systems.
- Decide if continued operation is justified or if systems are available to support safe facility shutdown.
- Minimize the impact of discovered acts of sabotage and deter future acts of sabotage.

Section 7
Notifications

I. Introduction

The facility manager and/or project leaders are responsible for the timely notification of their assurance manager or line management of events that could affect the health and safety of the public or endanger the health and safety of employees. Line management is then responsible for notification of appropriate DOE personnel and other agencies of these events. NOTE: Classified information is not to be disseminated as part of these notifications. LLNL has established a procedure that ensures the uniformity, efficiency, and thoroughness of such notifications consistent with LLNL's implementing procedure for DOE Order 5000.3A, "Occurrence Reporting."

II. Guidelines

The facility manager and/or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identification of events and conditions that require notification	Yes	FM/PL		
2. Understanding their responsibilities relative to notification procedures and documentation	Yes	FM/PL		
3. Notifying the appropriate assurance manager of the event or condition	Yes	FM/PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identification of events and conditions that require notification

HHF/MHF/LHF — Facility managers and/or project leaders and supervisors should be trained in what constitutes reportable occurrences, consistent with DOE Order 5000.3A and other applicable DOE Orders. Compliance with this guideline can be obtained by attending LLNL's emergency preparedness course (M-2010). (Reference: LLNL implementing procedure for DOE Order 5000.3A.)

2. Understanding their responsibilities relative to notification procedures and documentation

HHF/MHF/LHF — Facility managers and/or project leaders and supervisors should understand their responsibilities relative to the notification process, including (1) the responsibility for notifying their assurance officer; (2) the type of data required; (3) reporting deadline requirements; and (4) recordkeeping. The LLNL class providing this information is course EM2010, "Emergency Preparedness." (Reference: LLNL implementing procedure for DOE Order 5000.3A.)

3. Notifying the appropriate assurance manager of the event or condition

HHF/MHF/LHF — The assurance manager is separate from line management and should be informed of any events requiring notification.

Section 8
Controlling the Status of Equipment and Systems

I. Introduction

The status of equipment and systems important to safety or operations should be controlled so operations proceed according to specifications. Controls should exist for installation, modification, maintenance, and post-maintenance checkout of important equipment and systems. Also, it is important that current information regarding the status of equipment and systems be made available to personnel needing it to perform their work assignments properly.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying equipment and / or systems that needs controlling		FM / PL		
2. Establishing and implementing controls for the following:				
a. Authorizing modifications		FM / PL		
b. Informing necessary personnel of status changes		FM / PL		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
c. Ensuring that equipment is installed properly before operation		FM / PL		
d. Lockout and tagout procedures		FM / PL		
e. Ensuring compliance with operating limits		FM / PL		
f. Identifying and reporting equipment deficiencies		FM / PL		
g. Post-maintenance testing procedures		FM / PL		
h. Ensuring there is a clear indication of alarm status		FM / PL		
i. Installing temporary modifications or bypasses		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying equipment and/or systems that needs controlling

HHF/MHF/LHF — Identify equipment and / or systems whose misoperation, failure, or faulty installation, maintenance, or modification could result in the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

The guidelines specified in item 2 (below) apply to these systems or pieces of equipment.

2. Establishing and implementing controls for the following:

a. Authorizing modifications

HHF/MHF/LHF — A formal mechanism should be established to authorize changes in configuration or status.

b. Informing necessary personnel of status changes

HHF/MHF/LHF — A formal mechanism should be established to ensure personnel are kept informed of any changes in the operational status of the equipment or systems.

c. Ensuring that equipment is installed properly before operation

HHF/MHF/LHF — Prior to placing equipment or systems in operation for the first time, a management prestart review should be conducted to assure the hardware is capable of performing its intended function and that procedures are developed and approved. For major systems or pieces of equipment, an operational readiness review (ORR) may be required. For minor systems or pieces of equipment, management may wish to have the responsible individual conduct the management prestart review. Guidance for a management prestart review is discussed in Chapter 2 of *Health & Safety Manual.*

d. Lockout and tagout procedures

HHF/MHF/LHF — All facilities shall comply with the lockout and tagout procedures detailed in Supplement 26.13 of *Health & Safety Manual.*

e. Ensuring compliance with operating limits

HHF/MHF/LHF — Individuals who are responsible for conducting operations in a facility need to be informed of any operating limits. Documentation in logs, status sheets, checklists, or other appropriate documentation should be maintained to indicate compliance with proper operating limits. For example, magnahelic gauges that measure the pressure drop across HEPA filters must be read and their status documented periodically.

f. Identifying and reporting equipment deficiencies

HHF/MHF/LHF — Equipment deficiencies noted by employees should be immediately reported to the cognizant supervisor. Deficiencies should be communicated to personnel who are responsible for operating and repairing the equipment. *Hazardous and concealed dangers must be immediately identified and/or fixed in accordance with the California Criminal Liability Act (January 1991).*

g. Post-maintenance testing procedures

HHF/MHF/LHF — Equipment should be tested following maintenance to demonstrate that it is capable of performing its intended function. The testing should include all performance functions that may have been affected by the maintenance.

h. Ensuring there is a clear indication of alarm status

HHF/MHF/LHF — The status of alarms should be available to operations and maintenance personnel. Information should include alarms that are disabled, whose setpoints have been temporarily changed, or that are lit during normal operation.

i. Installing temporary modifications or bypasses

HHF/MHF/LHF — Administrative procedures should be established for the installation of temporary modifications, such as electrical jumpers, bypassed interlocks, temporary set-point changes, or disabled annunciators. The procedures should include authorization required to perform the temporary modification, documentation indicating the nature of the temporary modification, a specified length of time that the bypass is to be in effect, and documentation as to when the temporary modification has been removed. (Reference: Supplements 11.07 and 33.48 of *Health & Safety Manual*.)

Section 9
Lockouts and Tagouts

I. Introduction

Lockout and tagout is a proven procedure for ensuring that employees do not cause harm (e.g., shock) to themselves or others when working on or around equipment capable of causing such harm. It is imperative that individuals working on or around potential stored energy sources observe LLNL's lockout and tagout policies and procedures.

II. Guidelines

The facility manager and/or project leaders are responsible for ensuring the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Supervisors instruct employees to implement LLNL's lockout and tagout polices and procedures	Yes	FM / PL		
2. When appropriate, lockout and tagout requirements are incorporated into (or referenced in) FSPs, OSPs, or other operating procedures	Yes	FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Supervisors instruct employees to implement LLNL's lockout and tagout polices and procedures

HHF/MHF/LHF — Supervisors of LLNL and subcontract employees shall implement LLNL's lockout and tagout policies and procedures when employees are engaged in erecting, installing, constructing, repairing, adjusting, inspecting, operating, or maintaining equipment that is capable of causing personal harm, property damage, or significant work shutdown from an energy source. LLNL's lockout and tagout policies and procedures are contained in Supplement 26.13 of *Health & Safety Manual*, which includes the following elements: (1) implementation of lockout and tagout procedures; (2) standardization of protective materials and hardware; (3) establishment of a lockout and tagout program; (4) procedures for lockout and tagout; (5) application of lockout and tagout; (6) testing on positioning of equipment or components; (7) conduct and documentation of periodic inspections; (8) standardization of warning tags / signs; (9) notification, training, and communication of lockout / tagout procedures; (10) subcontractor interface on lockout / tagout procedures; (11) procedures for group lockout and tagout; (12) procedures for shift or personnel change; and (13) removal of lockout and tagout devices.

2. When appropriate, lockout and tagout requirements are incorporated into (or referenced in) FSPs, OSPs, or other operating procedures

HHF/MHF/LHF — Employees who routinely work on or around potentially energized systems tend to be very familiar with the lockout and tagout procedure. Facility managers and / or project leaders may wish to emphasize this procedure in appropriate FSPs, OSPs, or other operating instructions when the target audience consists of employees who do not routinely work on systems with stored electrical or mechanical energy.

Section 10
Independent Verification

I. Introduction

Independent verification is the act of checking to ensure that essential valves, switches, circuit breakers, etc., are properly positioned, and recognizes the human element of component operation; that is, that any employee, no matter how proficient, can make a mistake and misposition valves, switches, circuit breakers, etc. This section should be used to define when independent verification is required, identify which components must be included in the independent verification program, and prescribe methods for performing independent verification.

II. Guidelines:

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying equipment or systems that require independent verification		FM / PL		
2. Ensuring that correct component positioning is indicated on meter readouts or contained in written procedures		FM / PL		
3. Ensuring that independent verification is conducted and documented		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying equipment or systems that require independent verification

HHF/MHF/LHF — Identify equipment and/or systems with manually operated valves, switches, circuit breakers, etc., that do not have alarms or other means of detecting a mispositioning and whose mispositioning could result in the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

Subsequent items in this section pertain to equipment and/or systems meeting these criteria.

2. Ensuring that correct component positioning is indicated on meter readouts or contained in written procedures

HHF/MHF/LHF — Meters or switches should be positively identified as to acceptable positioning or specific written documentation indicating acceptable positioning should exist and be available to the individual conducting independent verification.

3. Ensuring that independent verification is conducted and documented

HHF/MHF/LHF — Independent verification should be conducted and documented, as appropriate (preferably by an individual not involved in the reinstallation, bypass, or maintenance operation), after the equipment or system has been returned to service following maintenance, put in a bypass mode, or tested for proper functioning. Periodic independent verification checks should also be performed during normal facility operations. Individuals conducting independent verification should be knowledgeable of the equipment or system, or be trained or instructed as to proper operation and positioning.

Section 11
Recordkeeping

I. Introduction

Formal records or logbooks should be maintained in facilities for those operations that can have significant impact to health, safety, or the environment, or significant impact to programs. These records should contain enough information so they can be used to track the history of various situations or pieces of equipment, or to document occurrences within the facility.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying operations, areas, or equipment where formal record-keeping is required, and assigning logbook-keeping responsibilities		FM / PL		
2. Specifying the type of information to be entered in the logbook		FM / PL		
3. Ensuring information is added in a timely manner		FM / PL		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
4. Specifying a method for correcting erroneous entries		FM / PL		
5. Directing logbook entries to be made in a legible and easily understood manner		FM / PL		
6. Periodically reviewing the logbook for conformance with logbook-keeping requirements		FM / PL		
7. Maintaining logbooks in a retrievable manner		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying operations, areas, or equipment where formal recordkeeping is required, and assigning logbook-keeping responsibilities

HHF/MHF/LHF — Logbooks should be maintained for work areas, equipment, or for programmatic support activities associated with operations, equipment, or processes that could produce the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

The following items in this section pertain to these logbooks.

2. Specifying the type of information to be entered in the logbook

HHF/MHF/LHF — As appropriate, information entered in operating logbooks should include the following:

- Abnormal equipment configurations;
- Significant changes in equipment status;
- Occurrence of abnormal events;
- Completion status of assigned work, including established routine surveillance;
- Changes in assigned employees;
- Equipment alarms;
- Date and identification of the person making the logbook entry; and
- Maintenance or repair activities.
- Facility mode or condition changes.

3. Ensuring information is added in a timely manner

HHF/MHF/LHF — Logbook entries should be made in a timely fashion so pertinent information is not forgotten and the logbook is kept current.

4. Specifying a method for correcting erroneous entries

HHF/MHF/LHF — Errors made in operating logbook entries should not be erased or covered up. Errors should be crossed out with thin lines that do not obscure the original entries. If this is not possible, there should be a written indication of where the corrected entries can be located. Error deletions and entry corrections should be initialed and dated.

5. Directing logbook entries to be made in a legible and easily understood manner

HHF/MHF/LHF — Operating logbook entries should be legible and easily understandable. If possible, entries should be made in chronological order and include the time, date, and initials of personnel making entries. Logbook entries relating to off-normal and emergency conditions should contain enough information to allow reconstruction of events at a later date. Employees should be instructed that maintaining control over equipment and operating conditions should take precedence over making logbook entries.

6. Periodically reviewing the logbook for conformance with logbook-keeping requirements

HHF/MHF/LHF — Supervisors directly responsible for work areas should periodically review logbooks in their areas for conformance with logbook-keeping requirements and to spot trends that may indicate degrading operations so that corrective action can be taken before an emergency occurs.

7. Maintaining logbooks in a retrievable manner

HHF/MHF/LHF — Logbooks should be protected from fire, water, or other types of damage. Completed logbooks should be retained in a retrievable manner for time periods specified by the facility manager or project leader.

Section 12
Shift Turnover

I. Introduction

Shift personnel should be aware of the current conditions in a facility so that they can perform their duties in a safe manner. Therefore, it is important that employees report changes and other relevant information that occurs during their shift to personnel on subsequent shifts.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying personnel (by position), equipment, and operations that require a shift turnover procedure		FM / PL		
2. Ensuring that a shift turnover checklist exists		FM / PL		
3. Specifying and documenting shift turnover responsibilities		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying personnel (by position), equipment, and operations that require a shift turnover procedure

HHF/MHF/LHF — Formal shift turnovers should be required for shift operations associated with operations, processes, or equipment that could produce the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

The facility manager and/or project leaders should allow for overlapping shifts, as appropriate, to provide for adequate information exchange between employees on different shifts. Subsequent items in this sections pertain only to these shift turnover activities.

2. Ensuring that a shift turnover checklist exists

HHF/MHF/LHF — A checklist should be prepared, used, and kept in a designated place.

3. Specifying and documenting shift turnover responsibilities

HHF/MHF/LHF — Shift personnel should read the operations log or other applicable documents before assuming responsibility. A description of the turnover process, including personnel responsibilities, should be documented. Shift personnel should be briefed by their supervisors as required.

Section 13
Indirect Monitoring of Operating Parameters

I. Introduction

In most cases, the important operating parameters of a facility or an experimental setups are monitored continuously and directly via gauges, meters, or other instrumentation. This section applies to those parameters that cannot be monitored directly and for which samples must be taken and analyzed to determine their status. The facility manager and/or project leaders are responsible for the identification and monitoring of those operating parameters that, if out of normal range, could significantly impact health, safety, or the environment. An example of a such an analysis is the testing of a potentially contaminated facility cooling system to ensure it does not cross-contaminate other facility equipment or LLNL's positively pressurized water (PPW) supply. This section does *not* apply to institutionally required sampling and analyses, such as testing of drinking water supplies, sewer monitoring, environmental sample analyses, or waste analyses.

II. Guidelines

The facility manager and/or project leaders are responsible for the following:

		Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1.	Identifying the systems/equipment requiring sampling and analysis and the analysis to be performed, and defining the range of acceptable results		FM/PL		
2.	Ensuring that employees involved in sampling and analysis understand their responsibilities		FM/PL		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
3. Ensuring that employees have the necessary training and equipment to carry out their specified tasks		FM / PL		
4. Responding to out-of-range results		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying the samples requiring analysis and analysis to be performed, and defining the range of acceptable results

HHF/MHF/LHF — Sampling and analyses should be conducted to identify conditions or materials that could significantly impact health, safety, the environment, or plant operations. The type of analysis to be performed and the range of "normal" results should also be specified for these samples. For example, analyses should be required for a facility cooling system that could cross-contaminate LLNL's PPW system or other facility equipment or systems. Examples of items that are excluded from this requirement include research chemistry, bioassay sample analysis, facility swipe analysis, and institutionally required chemical analyses. Subsequent items in this section apply to samples that require monitoring.

2. Ensuring that employees involved in sampling and analysis understand their responsibilities

HHF/MHF/LHF — Responsibilities to be specified should include, but not be limited to (1) how to take a sample; (2) who is responsible for sample collection; (3) what is the sampling frequency; (4) which analyses are required; (5) who is to review data; (6) how data are to be reported; and (7) what is the response to out-of-range results. Typically, these issues are resolved between the facility manager and the area ES&H team leader.

3. Ensuring employees have the necessary equipment to carry out their specified tasks

HHF/MHF/LHF — Individuals responsible for sampling, conducting analyses, and reviewing data will typically come from a variety of organizations not under the facility manager or project leader' s control (e.g., Environmental Protection Department, Chemistry and Materials Sciences Department, and / or Hazards Control Department). Payroll managers—as opposed to facility managers or project leaders—are responsible for ensuring their employees have the knowledge and training necessary for carrying out the requisite tasks.

Facility manager and/or project leaders are responsible for ensuring that employees have the necessary equipment to carry out their responsibilities.

4. Responding to out-of-range results

HHF/MHF/LHF — Facility managers and/or project leaders will typically be notified of out-of-range results by the area ES&H team environmental analyst, industrial hygienist, or health physicist, who will also supply recommendations for dealing with the situation. Facility managers and/or project leaders are ultimately responsible for the response to out-of-range results, which may include—but is not limited to—the following: identifying the cause; interpreting the results; taking steps to correct the problem; shutdown of equipment; follow-up actions; and reporting to management.

Section 14
Required Reading

I. Introduction

LLNL's safety policies and procedures are documented in a variety of manuals, including *Health & Safety Manual* and its supplements, FSPs, FMPs, DAPs, safety analysis reports and documents (SARs and SADs), operational safety requirements (OSRs), and OSPs. Employees need to be familiar with the details in many of these documents.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Determining which documents are to be included in each facility's required reading program		FM / PL		
2. Preparing a list of documents to be included in the required reading program		FM / PL		
3. Ensuring that the documents included in the required reading program are available in the facility		FM / PL		
4. Periodically reviewing and updating the required reading list		FM / PL		
5. Providing a system for documenting that employees have completed the required reading		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Determining which documents are to be included in each facility's required reading program

HHF — Employees should read documents that pertain specifically to their operation. Examples of required reading may include the FSP, OSP, and applicable material safety data sheets (MSDSs). Supervisors or project leaders should have a more global understanding of the facility and operations and may have SARs, SADs, or FMPs included on their list of required reading.

MHF/LHF — Employees should be required to read documents that pertain specifically to their operation. Examples of required reading may include the FSP and/or OSP.

2. Preparing a list of documents to be included in the required reading program

HHF/MHF/LHF — The required reading list should be documented and publicized. Required reading may be included in the facility or program training plans.

3. Ensuring that the documents included in the required reading program are available in the facility

HHF/MHF/LHF — Required reading documents should be available in the facility or in the program area.

4. Periodically reviewing and updating the required reading list

HHF/MHF/LHF — The required reading list should be periodically updated and approved by the person (by position) generating the list.

5. Providing a system for documenting that employees have completed the required reading

HHF/MHF/LHF — Documentation should be provided to show that employees have completed the required reading on their list.

Section 15
Instructions to Employees

I. Introduction

Information or instructions that are important to health, safety, or the environment, or that could have significant impact on programs, must be accurately communicated to employees. Additionally, because LLNL operates with a matrix-management system, instructions or requests for support often are directed to employees outside the immediate facility or program. Therefore, it is important that effective means exist for providing instructions to employees within facilities and programs and across the support organizations that comprise LLNL.

II. Guidelines

The facility manager and/or project leaders should ensure there is a mechanism for implementing the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying special short- and long-term instructions to employees		FM/PL		
2. Contacting and making requests of support organizations		FM/PL		
3. Adequately posting areas containing a potential safety hazard		FM/PL		

III. Guidance For Implementing or Evaluating Compliance with Specific Guidelines:

1. Identifying special short- and long-term instructions to employees

HHF/MHF/LHF — Special short- and long-term instructions that, if misunderstood, could result in the following conditions must be accurately communicated to employees:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

"Special instructions" are typically supplemental to normal operating procedures and issued in response to a changing condition. As appropriate, long-term instructions should be incorporated into the procedure during the review cycle following their issuance. The facility manager and/or the project leaders should provide a means of communicating these instructions to employees. Logs or daily orders books are examples of mechanisms that can be effectively used for this purpose.

2. Contacting and making requests of support organizations

HHF/MHF/LHF — Supervisors should be informed as to how to contact support organizations relevant to their operation. Support organizations include, but are not limited to, Hazards Control, the Environmental Protection Department, Plant Engineering, Mechanical Engineering, and Safeguards and Security,

3. Adequately posting areas containing a potential safety hazard

HHF/MHF/LHF — Supervisors should ensure that areas with special requirements or those containing safety hazards are appropriately posted. For example, a room where an incident has just occurred needs to be undisturbed until the investigation is complete. Such an area should be secured or roped off and posted with a "Do Not Enter" sign containing the name and phone number of a contact person. Employees are instructed in course HS0001 (New Employee Safety Orientation) to observe all such signs posted in an area.

Section 16
Equipment Operating Procedures

I. Introduction

Operating procedures are written instructions that give employees directions on how to conduct specific operations or operate specific systems or pieces of equipment during normal, postulated off-normal, and emergency conditions. Such procedures should be written for operations that could significantly impact health, safety, the environment, or the program.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying equipment that requires operating procedures		FM / PL		
2. Ensuring that the content of operating procedures conforms to prescribed guidelines		FM / PL		
3. Specifying a formalized method for initiating temporary and permanent changes to operating procedures		FM / PL		
4. Reviewing and documenting approval of operating procedures		FM / PL		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
5. Ensuring that new operating procedures and those undergoing major revision are operationally tested prior to final approval and use		FM / PL		
6. Reviewing operating procedures to ensure they are kept current		FM / PL		
7. Ensuring that supervisors maintain a copy of applicable operating procedures in work areas for employee reference		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying equipment that requires operating procedures

HHF/MHF/LHF — Identify equipment and / or systems whose misoperation could result in the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

Operating procedures must be written for this equipment and these systems. The following items in this section pertain to these required procedures. (NOTE: Operating procedures are step-by-step instructions for operating a system or piece of equipment. They are *not* OSPs.)

2. Ensuring that the content of operating procedures conforms to prescribed guidelines

HHF/MHF/LHF — Operating procedures for normal, off-normal, and emergency conditions may be combined in one or prepared in separate procedures. Procedures for systems or processes that contain several major components may be prepared in sections that correspond to individual components. Procedures do not have to completely describe individual operating systems or processes, but they should be comprehensive enough to allow employees to perform required work without supervision. Each operating procedure should contain the following sections, as appropriate:

a. Purpose—an explanation of why the procedure has been prepared.

b. Description of equipment—a brief description of the equipment or system and its location.
c. Definitions (as applicable).
d. Safety considerations—a list of applicable safety or operating limits, cautions, and warnings.
e. Prerequisites (as applicable)—a list of tools, instrumentation, training, etc., needed to begin work.
f. Responsibilities—a list of titles of the supervisor and an alternate responsible for the work.
g. Operating instructions—the operating steps should be arranged in the normal or expected operating sequence. If appropriate, notes of caution or warning should precede the step they apply to. If instructions covering emergency conditions are included in this section, they should be clearly labeled as "emergency instructions."
h. References (if applicable).
i. Figures and tables (if applicable)— include a list of figures and tables in the order they are mentioned in the operating instructions.
j. Individual sign-offs should be provided for selected critical steps, as appropriate.

3. Specifying a method for initiating temporary and permanent changes to operating procedures

HHF/MHF/LHF — During periodic reviews of operating procedures, changes should be made if inadequacies or errors are found. When work is being conducted, on-the-spot changes can be made if approved by the lead employee and the supervisor of the work activity. Information about on-the-spot changes should be documented. Management approving the original procedure should be promptly notified in writing about the content and reason for the on-the-spot change. Distribution copies of operating procedures should be updated if on-the-spot changes are made to the original procedures. Supervisors and employees should take necessary actions during emergencies to protect personnel, equipment, and the public without initiating the formal procedure change process.

4. Reviewing and documenting approval of operating procedures

HHF/MHF/LHF — Operating procedures should receive initial and at least annual (± 2 months) management review for correctness. Management approval should not be given until review comments have been resolved. In addition, new and significantly revised procedures should be reviewed by the supervision for the work activity, area ES&H team leader, and management responsible for the work activity. Any of these reviewers may request additional interdisciplinary reviews. A signature page should be attached to distribution copies and should contain dated signatures of managers approving the procedure.

5. Ensuring that new operating procedures and those undergoing major revision are operationally tested prior to final approval and use

HHF/MHF/LHF — New operating procedures and those receiving major revision should be verified for correctness prior to management approval. As appropriate, procedures should be verified after occurrences such as accidents, equipment malfunctions, and employee operating errors.

6. Reviewing operating procedures to ensure they are kept current

HHF/MHF/LHF — Provisions should be made for ensuring official copies of operating procedures are kept current. They should be reviewed and updated at least annually.

7. Ensuring that supervisors maintain a copy of applicable operating procedures in work areas for employee reference

HHF/MHF/LHF — Employees should be instructed in the use of operating procedures. Procedures should include instructions that can be used as references on how to conduct infrequently performed activities and respond to off-normal conditions. Employees should be knowledgeable enough with emergency procedures to take immediate action without first consulting the emergency procedures.

Section 17
Operator-Aid Postings

I. Introduction

"Operator aids" are technical postings, other than formal procedures, rules, instructions, etc., that assist employees in accomplishing specific tasks and are not required to be posted or displayed by any organization or procedure. Examples of operator aids include a temperature curve for an induction furnace; a calibration curve for a radiation detector; and a schematic of the electrical distribution system for a glovebox. Examples of required postings (those are *not* operator aids) include radiation area signs; material balance sheets; and evacuation assembly point postings. Operator aids provide an important function in the safe operation of a facility; therefore, it is important that these postings reflect the most current information available and do not conflict with any other controlled procedure or information.

II. Guidelines

The facility manager and / or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying operator aids that must be controlled		FM / PL		
2. Identifying an individual responsible for approving operator aids		FM / PL		

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
3. Ensuring that operator aids are periodically reviewed to verify they are current and appropriate		FM / PL		
4. Ensuring that operator aids are posted so that they do not obscure or interfere with instruments or controls		FM / PL		
5. Ensuring that operator aids are legible and posted as close as practicable to the system or equipment they are associated with		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying operator aids that must be controlled

HHF/MHF/LHF — Identify operator aids whose accuracy is critical to operating a system or piece of equipment so that it does not produce the following:

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

Subsequent items in this section apply to these operator aids only.

2. Identifying an individual responsible for approving operator aids

HHF/MHF/LHF — Management should designate an individual responsible for approving the posting of operator aids. The designated individual should be knowledgeable about the system and should be responsible for subsequent items in this section.

3. Ensuring that operator aids are periodically reviewed to verify they are current and appropriate

HHF/MHF/LHF — Operator aids should be reviewed annually to verify that they are current and appropriate and that items posted during the year are identified as operator aids, if appropriate.

4. **Ensuring that operator aids are posted so that they do not obscure or interfere with instruments or controls**

   HHF/MHF/LHF — Posted information *should not* obscure or interfere with proper operation of instruments, equipment, or controls.

5. **Ensuring that operator aids are legible and posted as close as practicable to the system or equipment they are associated with**

   HHF/MHF/LHF — Signs should be legible and posted unambiguously, so it is clear and obvious what they refer to. Consideration should be given to "formalizing" operator aids—i.e., having permanent signs made up or laminating paper signs. Signs that are illegible or confusing should be removed.

Section 18
Equipment and Piping Labeling

I. Introduction

It is important that equipment and piping be consistently labeled in LLNL facilities, so maintenance and modifications can be safely conducted.

II. Guidelines

Facility managers and/or project leaders are responsible for the following:

	Applicable (Yes/No)	Responsible individual (FM/PL)	Compliance (Yes/No)	Comment and/or reference for verification of compliance
1. Identifying equipment and piping that must be labeled in accordance with this program		FM / PL		
2. Using Plant Engineering standards for label requirements, label placement, and abbreviations		FM / PL		
3. Ensuring that employees are trained or instructed before performing maintenance on labeled equipment		FM / PL		
4. Maintaining a list of equipment and piping that require labeling		FM / PL		

III. Guidance for Implementing or Evaluating Compliance with Specific Guidelines

1. Identifying equipment and piping that must be labeled in accordance with this program

HHF/MHF/LHF — Facility and programmatic equipment and piping associated with operations, processes, or equipment that could produce the following must be labeled in accordance with the Plant Engineering Standards PEL-M-11009, Rev. A (for equipment) and PEL-M-1.02, Rev. C (for piping and valve identification):

- Significant impact to health, safety, or the environment; or
- Significant impact to programs.

Examples of components requiring labeling are valves; major equipment (e.g., tanks, pumps, and compressors); switches; circuit breakers; fuse blocks or fuse locations; instruments and gauges; buses and motor control centers; emergency equipment; and fire protection systems. Assistance and guidance on facility equipment and piping labeling can be obtained from Plant Engineering. Subsequent items in this section apply to the systems and equipment identified above.

2. Using Plant Engineering standards for label requirements, label placement, and abbreviations

HHF/MHF/LHF — Follow the guidelines for label requirements, label placement, and abbreviations described in Plant Engineering Standards PEL-M-11009 (Rev. A) and PEL-M-1.02 (Rev. C).

3. Ensuring employees are trained or instructed before performing maintenance on labeled equipment

HHF/MHF/LHF — Employees operating or performing maintenance on a system that requires labeling must recognize the significance of the labeling, and perform their work accordingly. Individuals needing assistance can reference Plant Engineering Standards PEL-M-11009 (Rev. A) and PEL-M-1.02 (Rev. C) or call Plant Engineering for assistance.

4. Maintaining a listing of equipment and piping that requires labeling

HHF/MHF/LHF — A list of equipment and piping requiring labeling should be maintained.